

BELL + HOWELL ULTRASONIC PEST REPELLER

EFFICACY TEST REPORT





TEST REPORT

Report Number: 140515021GZU-002

Issued Date: July 7, 2014

Applicant : INTELLITEC INTERNATIONAL INC.

Address : Unit201 Yuekai Commercial Building,NO28,Dongyuan Road,Changping Town,Dongguan

Manufacturer : INTELLITEC INTERNATIONAL INC.

Address : Unit201 Yuekai Commercial Building,NO28,Dongyuan Road,Changping Town,Dongguan

Specimen Description

Product : BELL + HOWELL Ultrasonic Pest Repeller

Style Number : 50167

Sample Received Date : Provided by applicant on May 16,2014

Quantity of Sample : 1 piece

Test Content

Date Test Conducted : From May 16, 2014 to May 27, 2014

Test Requested : Witness for performance testing
- Ants, Spiders and Roaches

Test Standard/Method : According to client's requirement.

Test Location : Dongguan, Guangdong, China

Test Results : Please see the following pages for details

Remark: When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Prepared by:

Leo Lin

Leo Lin
Engineer

Reviewed by:

Sam Lin

Sam Lin
Supervisor

Page 1 of 10

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SAMPLE INFORMATION

One BELL + HOWELL Ultrasonic Pest Repeller were received in good condition and could work normally.

Sample Outlook	
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Page 2 of 10

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TEST OBJECT

Testing Ultrasonic Pest Repeller against Ants, Spiders and Roaches in laboratory environment, conducting observations in total 11 days period, including 2 days Preliminary test, 7 days During test and 2 days Post test. This is to measure the efficacy of high-frequency sound as a pest management tool. Both frequency and sound pressure (db) are important parameters.

TEST CONDITION

The test samples were stored in a locked cabinet at ambient temperature and humidity until use in testing. And during testing test chambers were stored at ambient temperature and humidity.

TEST PROCEDURE

1. Prepare test chambers, test pests and food/water

Test chambers consisted of two plastic chambers, chamber A (with ultrasonic pest repeller) and Chamber B (no ultrasonic pest repeller), each chamber is 4 feet (L) x 4 feet (W) x 1.5 feet (H). There is an 8.5 feet long plastic tunnel to connect the two chambers. See appendix III for reference.

Test chambers were sealed by Intertek sealed label. After daily check, replace with new sealed label.

Test pests consisted of 10 ants, 10 spiders and 10 roaches. All of them were adult and healthy.

Placed an equal amount of food and water in chamber A and chamber B. Used granulated sugar as food. Soaked sponges in the water, this helps test pests drinking water easier. 20g food and 40g water were prepared in each chamber daily during the test.

2. Preliminary Testing

Test pests' activity was documented before and after device installation. To observe general activity, a Preliminary Testing was conducted before the actual test to ensure the test apparatus and the selected food functioned properly. The Ultrasonic Pest Repeller was turned OFF during preliminary testing. The release of test pests in Chamber A and Chamber B will be proportionate, with 50% of Ants, Spiders and Roaches distributed evenly in each chamber. The test pests were given 2 days (48 hours) to move freely around chamber A, Chamber B and the tunnel prior to the introduction of the Ultrasonic Pest Repeller.

The fecal pellet counts & Urine spots were cleaned daily (24 hours).

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TEST PROCEDURE (continued)

3. Observation of Repellency (During Testing)

Turn On Ultrasonic Pest Repeller. Test pests were recorded at a 24 hours intervals for 7 days (or 168 hours). Any test pests that stay in the Chamber B (without ultrasonic pest repeller) were counted as repelled. Any test pests stay in Chamber A (with ultrasonic pest repeller) were counted as not repelled. The test pests were given 7 days (168 hours) to move freely around Chamber A and Chamber B and the tunnel when the Ultrasonic Pest Repeller is ON.

The fecal pellet counts & Urine spots were cleaned daily (24 hours).

4. Post Testing

To observe general activity, a post testing was conducted to ensure the test apparatus and the selected food functioned properly. Ultrasonic Pest Repeller was turned OFF during post testing. The test pests were given 2 days (48 hours) to move freely around chamber A, Chamber B and the tunnel.

The fecal pellet counts & Urine spots were cleaned daily (24 hours).

5. Testing record

During total of 11 days (264 hours) testing period, record below items at a 24hours interval.

1. The quantity of ants/spiders/roaches in each chamber. No change was made in the rats/mice population.
2. The consumption of food and water in each chamber.
3. The fecal pellet counts & Urine spots in each chamber.

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TEST RESULT

		PRELIMINARY TESTING		DURING TESTING						POST TESTING	
				SWITCH OFF		SWITCH ON					
Chamber A (W/Pest Repeller)	Quantity	-48Hrs	-24Hrs	24Hrs	48Hrs	72Hrs	96Hrs	120Hrs	144Hrs	168Hrs	+24Hrs
		(-2 Day)	(-1 Day)	(1 Day)	(2 Day)	(3 Day)	(4 Day)	(5 Day)	(6 Day)	(7 Day)	(+1 Day)
Observe Date	17-May-14	18-May-14	19-May-14	20-May-14	21-May-14	22-May-14	23-May-14	24-May-14	25-May-14	26-May-14	27-May-14
Observe Time	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM	11:00AM
Chamber B	Quantity	Spider	3	3	3	1	2	1	1	0	0
		Roaches	7	6	5	0	1	0	0	0	0
Chamber B	Quantity	Ants	4	6	4	1	0	1	0	0	0
		Consumed food(g)	0.6	1.6	0	0	0	0.2	0	0	0.2
Chamber B	Quantity	Consumed water(ml)	3.2	9.2	6.2	2.6	3	1.6	2.8	1.6	1.8
		Spider	7	7	7	9	8	9	9	10	10
Chamber B	Quantity	Roaches	3	4	5	10	9	10	10	10	8
		Ants	6	4	6	9	10	9	10	10	4
Chamber B	Quantity	Consumed food(g)	0.2	1.0	0.2	0.2	0.4	0.8	0.6	0.4	0.4
		Consumed water(ml)	1.4	8.0	9.2	4.4	5.2	3.4	4.0	4.4	3.6

Note: Found 1 spider 1 march & 2 ants dead on 17-May-2014: 1 roach & 2 ants dead on 18-May-2014: 1 roach dead on 19-May-2014. Added new spiders, roaches & ants next day.

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Page 5 of 10

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TEST RESULT (Continued)

For Roaches fecal pellet & urine spots

STAGE/ SWITCH ON/OFF		DATE	SUBJECT	CHAMBER A (W/ PEST PELLER)	CHAMBER B
PRELIMINARY TESTING	SWITCH OFF	17-May-14	ROACHES	Equal	Equal
		18-May-14	ROACHES	Equal	Equal
DURING TESTING	SWITCH ON	19-May-14	ROACHES	Equal	Equal
		20-May-14	ROACHES	Little	More
		21-May-14	ROACHES	Little	More
		22-May-14	ROACHES	Little	More
		23-May-14	ROACHES	Little	More
		24-May-14	ROACHES	Little	More
		25-May-14	ROACHES	Little	More
POST TESTING	SWITCH OFF	26-May-14	ROACHES	Little	More
		27-May-14	ROACHES	Equal	Equal

Note:

Fecal pellet and urine are observed and witnessed by naked eye. Due to tiny and irregular sizes, Ants, Spiders and Roaches' fecal pellet & urine spots are not easy to count, therefore quantity difference is described by three levels-little, very little and more.

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Appendix I

Testing device overlook	Intertek sealed label
Status under repeller switch off (chamber B)	Status under repeller switch off (chamber A)
Status under repeller switch on (chamber B)	Status under repeller switch on (chamber A)

***** End of Page *****

Page 7 of 10

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Appendix II

A black and white photograph showing a food scale with a white bowl on top. The scale has a digital display and a keypad below it.	A black and white photograph showing a white bowl filled with food, placed on a surface.
Food weigh	Consumption of food check
A black and white photograph showing a water scale with a white bowl on top. The scale has a digital display and a keypad below it.	A black and white photograph showing a white bowl filled with water, placed on a surface.
Water weigh	Consumption of Water check

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Page 8 of 10

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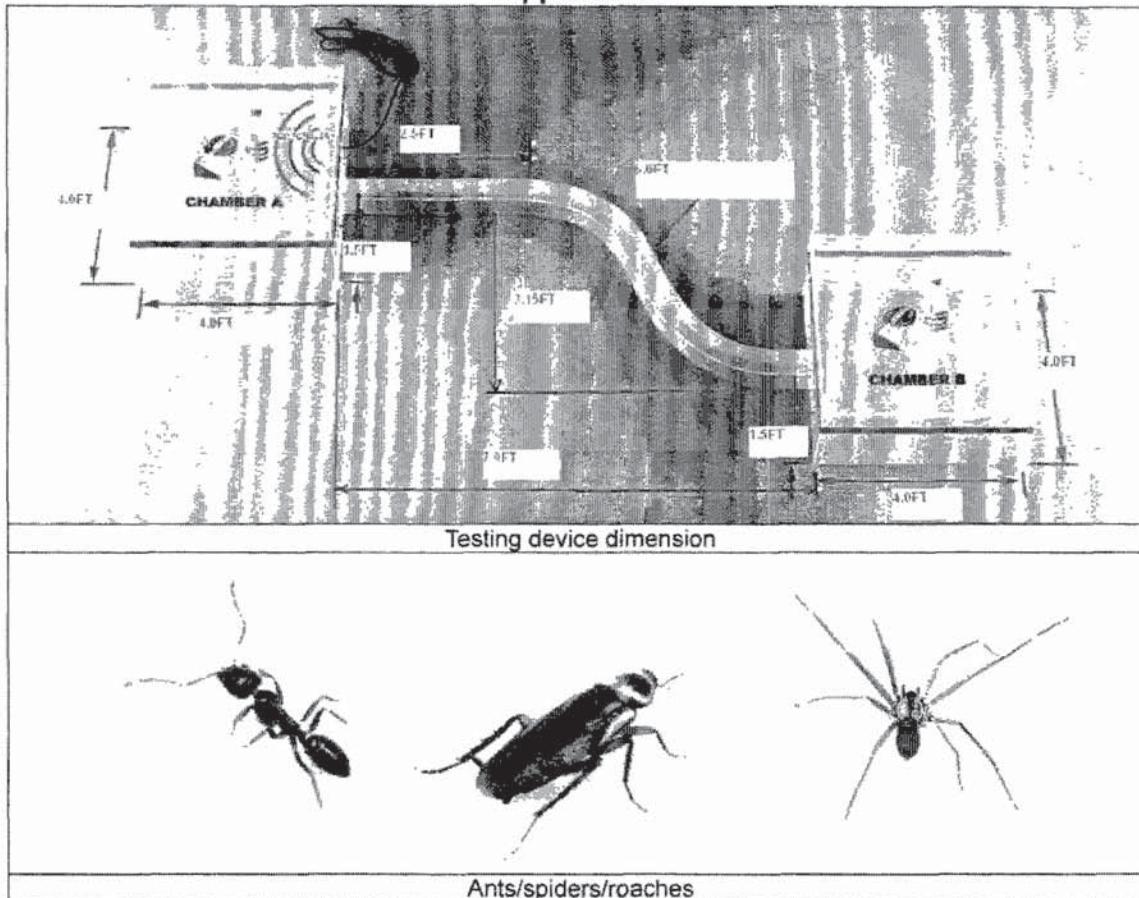
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Appendix III



Ants/spiders/roaches

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Page 9 of 10

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REVISION SUMMARY

Date	Project Handler Reviewer	Page	Description of Change
2014-7-7			Initial release

End of Report

2015 RATS/ MICE TEST REPORT RESULT ANALYSIS

July 7, 2014

Construction of Test Chamber:

- The test was conducted in two plastic chambers. Each chamber was 4' (L) x 4' (W) x 2' (H).
- Ultrasonic Pest Repeller was placed in chamber A. There was no Ultrasonic pest repeller in Chamber B.
- In between, there was an 8.5 feet long plastic tunnel. The tunnel was "curved" and two chambers were designed in Hi-Lo level. The curved and Hi-Lo tunnel design was to further ensure ultrasonic sound wave would not enter from chamber A into chamber B since sound wave was directional.
- All edges were sealed securely with Intertek unbreakable labels. Only Intertek inspector could open the chambers to rats/ mice quantities, weighted food and water and replaced new seals on a daily basis.
- Total 10 rats and 10 mice were used, and tested separately in different chambers.
- Released 50% of rats / mice in chamber A, and another 50% of rats / mice in Chamber B at the beginning of the test.
- There were 3 testing stages:
 - Preliminary Testing: 2 days = 48 hours, pest repeller was OFF
 - During Testing: 7 days = 168 hours, pest repeller was ON
 - Post Testing: 2 days = 48 hours, pest repeller was OFF

Test Result Analysis

Rats (see page 5)

- Preliminary Testing: 40%~60% rates stayed in Chamber A, 60%~40% rates stayed in Chamber B.
- During Testing: Day 1 ~ Day 3, 60%~90% rats stayed away from Chamber A, Day 4 ~ Day 7, 100% rates stayed away from Chamber A. Pest repeller was switched ON in Chamber A during testing.
- Post Testing: 30% ~ 60% rates returned to Chamber A after pest repeller was switched off.
- Water and food consumption was much LESS in Chamber A During Testing when pest repeller was switched on. The consumption quantities were closer in two chambers during Preliminary and Post Testing when pest repeller was switched off. To record water and food consumption result on a daily basis helped to understand rates' eating behavior under the influence of ultrasonic sound.

Mice – (see page 6)

- Preliminary Testing: 40%~50% Mice stayed in Chamber A, 60%~50% Mice stayed in Chamber B.
- During Testing: Day 1 ~ Day 3, 80% ~ 90% mice stayed away from Chamber A, Day 4 ~ Day 7, 90% ~ 100% mice stayed away from Chamber A. Pest repeller was switched on in Chamber A during testing.
- Post Testing: 40% ~ 60% Mice returned to Chamber A after pest repeller was switched off.
- Water and food consumption was much LESS in Chamber A During Testing when pest repeller was switched on. The consumption quantities were closer in two chambers during Preliminary and Post Testing when pest repeller was switched off. To record water and food consumption result on a daily basis helped to understand ant's eating behavior under the influence of ultrasonic sound.

Fecal Pellets Count (see page 7)

- Lab technician traced and recorded pest fecal pellets on a daily basis, this helped to further understand pest's activities and behaviors under the influence of ultrasonic sound.
- Lab technician could only trace fecal pellets and urine spot was observed:
 - When pest repeller was switched on During Testing; fecal pellets appeared to be much LESS quantities in Chamber A.
 - When pest repeller was switched off during Preliminary and Post Testing, fecal pellet quantities appeared to be more EVEN in two chambers.
- There was neither fecal pellet nor urine spot was found from rats and mice during the entire testing period.